

**We claim:**

1. A flow management system, comprising:  
a first panel having a fluid pathway for passing a first fluid, the first panel comprising a first compartment to receive a volume of the first fluid;  
5 a second panel having a fluid pathway for passing a second fluid, the second panel comprising a second compartment to receive a volume of the second fluid, the first and second panels being aligned so that the first compartment overlays the second compartment; and  
a first surface and a second surface defining a gap, the first and second compartments disposed within the gap so that the second compartment bears against the second surface as the second fluid fills the second compartment and forces the first fluid out from the first compartment as the first compartment bears against the first surface.  
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2. The flow management system of claim 1, wherein the first panel further comprises a third compartment to receive a volume of the first fluid.
3. The flow management system of claim 1, wherein the second panel further comprises a fourth compartment to receive a volume of the second fluid.  
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4. The flow management system of claim 1, wherein the panels are aligned by folding.
5. The flow management system of claim 1, wherein the panels are die cut and overlay one another.
- 20 6. The flow management system of claim 1, wherein the panels are flexible.
7. The flow management system of claim 1, wherein each panel has a pattern of seals.
8. The flow management system of claim 1, wherein the first fluid is an outgoing fluid.

9. The flow management system of claim 1, wherein the second fluid is an in-going fluid.

10. A flow management system, comprising:

a first panel having a fluid pathway for passing a first fluid, the first panel comprising a first compartment to receive a volume of the first fluid, the first compartment communicating with first and second channels; and

a second panel having a fluid pathway for passing a second fluid, the second panel comprising a second compartment to receive a volume of the second fluid, the second compartment communicating with third and fourth channels,

the panels being aligned so that the first compartment overlays the second compartment, the first channel overlays the third channel, and the second channel overlays the fourth channel, so that the first fluid passes out through the first channel as the second fluid passes in through the third channel without mixing of the first and second fluids.

11. The flow management system of claim 10, wherein the first fluid from the first compartment is displaced as the second fluid fills the second compartment.

12. The flow management system of claim 10, further comprising a first surface and a second surface defining a gap, the first and second compartments disposed within the gap so that the second compartment bears against the second surface as the second fluid fills the second compartment and forces the first fluid out from the first compartment.

13. The flow management system of claim 10, wherein the first panel further comprises a third compartment to receive a volume of the first fluid.

14. The flow management system of claim 10, wherein the second panel further comprises a fourth compartment to receive a volume of the second fluid.

15. The flow management system of claim 10, wherein the panels are aligned by folding.

16. The flow management system of claim 10, wherein the panels are die cut and overlay one another.

17. The flow management system of claim 10, wherein the panels are flexible.

18. The flow management system of claim 10, wherein each panel has a pattern of seals.

19. The flow management system of claim 10, wherein the first fluid is an outgoing fluid.

20. The flow management system of claim 10, wherein the second fluid is an incoming fluid.

21. A flow management system, comprising:  
a first panel having a fluid pathway for passing a first fluid, the first panel comprising a first compartment to receive a volume of the first fluid, the first compartment communicating with first and second channels;  
a second panel having a fluid pathway for passing a second fluid, the second panel comprising a second compartment to receive a volume of the second fluid, the second compartment communicating with third and fourth channels, the panels being aligned so that the first compartment overlays the second compartment, the first channel overlays the third channel, and the second channel overlays the fourth channel; and  
a releasable clamp that bears against the first channel and the third channel to close the first and third channels.

22. The flow management system of claim 21, wherein the releasable clamp is a solenoid clamp.

23. The flow management system of claim 21, wherein the releasable clamp is a spring loaded clamp.

24. The flow management system of claim 21, wherein the first fluid from the first compartment is displaced as the second fluid fills the second compartment.

25. The flow management system of claim 21, further comprising a first surface and a second surface defining a gap, the first and second compartments disposed within the gap so that the second compartment bears against the second surface as the second fluid fills the second compartment and forces the first fluid out from the first compartment.

26. A method for monitoring pressure in a blood processing system, comprising the steps of:

passing a fluid through a panel having a fluid channel, the channel having an inside surface that contacts the fluid and an outside surface, and being formed of a flexible material that distributes pressure evenly;

contacting a pressure meter with the outside surface of the fluid channel; and  
operating the pressure meter to measure the pressure of the fluid passing through the fluid channel.

27. A method for detecting a blood leak in a blood processing system, comprising the steps of:

passing a fluid through a panel having a fluid channel, the channel having an inside surface that contacts the fluid and an outside surface;

positioning an optical detector adjacent the outside surface of the fluid channel;

operating the optical detector to measure the absorption spectrum of the fluid passing through the fluid channel; and

comparing the measured spectrum to the known spectrum for the fluid to determine whether the fluid is contaminated with blood.

28. A flow management system, comprising:

a panel having a fluid pathway for passing a fluid, the panel comprising a compartment to receive a volume of the fluid, the compartment communicating with a channel that communicates with a fluid source and a recirculation port; and

5 a releasable clamp that bears against the recirculation port to close the recirculation port, wherein fluid passes from the source and through the channel until the compartment is filled, and excess fluid passes through the recirculation port by releasing the clamp.

29. The flow management system of claim 28, wherein the releasable clamp is a spring loaded clamp.

30. The flow management system of claim 28, wherein excess fluid is returned to the fluid source.

31. The flow management system of claim 28, wherein fluid is pumped from the source and through the channel until the compartment is filled.

32. The flow management system of claim 28, wherein the fluid source comprises a length of tubing in registry with a rotor pump.